[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2013-0331; Directorate Identifier 2011-NM-170-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 747-200B, 747-200F, 747-300, 747SP, 747-400, and 747-400F series airplanes equipped with Rolls-Royce RB211-524 engines; and certain Model 767-300 series airplanes equipped with Rolls-Royce RB211-524 engines. This proposed AD was prompted by multiple reports of uncommanded thrust reverser unlock events. This proposed AD would require replacing certain relays and relay sockets, and doing wiring changes. For certain airplanes, this proposed AD would also require installing new relay panels, and removing and installing certain components. Additionally, this proposed AD would require, for certain airplanes, accomplishing concurrent actions, which include installing an additional locking system on the thrust reversers, installing an additional locking gearbox on each engine and modifying system wiring for in-flight fault indications of the thrust reverser system, and installing a second locking gearbox system on the thrust reversers. We are proposing this AD to prevent an uncommanded thrust reverser deployment during takeoff or in-flight resulting in decreased airplane control and performance, possible runway excursions, and failure to climb.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to http://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: 202-493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

• Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; phone: 206-544-5000, extension 1; fax: 206-766-5680; Internet: https://www.myboeingfleet.com. You may review copies of the referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Tung Tran, Aerospace Engineer, Propulsion Branch, ANM-140S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6505; fax: 425-917-6590; email: Tung.Tran@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2013-0331; Directorate Identifier 2011-NM-170-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to http://www.regulations.gov, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We have received multiple reports of uncommanded thrust reverser unlock events. In three of these events, all three thrust reverser locks had disengaged. One report stated that during takeoff roll on a Rolls-Royce RB211-524-powered Model 747-400 airplane, the flightcrew received the ENG 4 REV LIMTD EICAS status message and the ENG 4 REVERSER advisory and status messages. During climb, the cabin crew saw sparks from the exhaust of the number 4 engine. The event was found to be caused by a failure of the o-rings in the air motor switcher or shutoff solenoid valves because of overheating. This let the air motor shutoff valve open, which released the air motor brake.

Releasing the air motor brake in the ground mode energized the number 2 and number 3 thrust reverser gear box unlock solenoids, thereby unlocking the number 2 and number 3 gear boxes. The thrust reverser system on the Rolls-Royce RB211-powered Model 767 airplane is similar to that on the Model 747-400 airplane, and the Model 767 airplane thrust reverser system is likely to be susceptible to the same failure mode. This condition, if not corrected, could result an uncommanded thrust reverser deployment during takeoff or in-flight resulting in decreased airplane control and performance, possible runway excursions, and failure to climb.

Relevant Service Information

We reviewed the following service information:

- Boeing Service Bulletin 747-78-2178, Revision 1, dated August 4, 2011.
- Boeing Service Bulletin 747-78-2180, Revision 2, dated November 11, 2011.
- Boeing Service Bulletin 767-78-0096, Revision 1, dated December 10, 2009.

For information on the procedures and compliance times, see this service information at http://www.regulations.gov by searching for Docket No. FAA-2013-0331.

Concurrent Service Information

Boeing Service Bulletin 747-78-2178, Revision 1, dated August 4, 2011, specifies concurrent or prior accomplishment of Boeing Service Bulletin 747-78-2156, Revision 1, dated August 30, 2001. Boeing Service Bulletin 747-78-2180, Revision 2, dated November 11, 2011, specifies concurrent or prior accomplishment of Boeing Service Bulletin 747-78-2158, Revision 2, dated July 29, 1999. Boeing Service Bulletin 767-78-0096, Revision 1, dated December 10, 2009, specifies concurrent or prior accomplishment of Boeing Service Bulletin 767-78-0059, Revision 3, dated January 20, 1994. For information on the procedures, see this service information at http://www.regulations.gov by searching for Docket No. FAA-2013-0331.

Other Relevant Rulemaking

AD 2000-01-05, Amendment 39-11502 (65 FR 1051, January 7, 2000), which applies to certain Boeing Model 747-100B, -200, -300, and 747SP series airplanes equipped with Rolls-Royce RB211-524B2, C2, and D4 engines, requires repetitive inspections and tests of the thrust reverser control and indication system on each engine, and corrective actions if necessary; installation of a terminating modification; and repetitive operational checks of that installation, and repair if necessary. AD 2000-01-05 refers to Boeing Service Bulletin 747-78-2156, dated October 31, 1996, as the appropriate source of service information for accomplishing the required terminating modification.

AD 2000-02-22, Amendment 39-11540 (65 FR 5222, February 3, 2000), for certain Boeing Model 747-400 series airplanes equipped with Rolls-Royce RB211-524G/H and RB211-524G-T/H-T engines, requires installation of a modification of the thrust reverser control and indication system and wiring on each engine; and repetitive operational checks of that installation to detect discrepancies, and repair if necessary. AD 2000-02-22 refers to Boeing Service Bulletin 747-78-2158, Revision 2, dated July 29, 1999, as the appropriate source of service information for accomplishing the required modification.

AD 94-17-03, Amendment 39-8998 (59 FR 41647, August 15, 1994), for certain Boeing Model 767 series airplanes equipped with Rolls-Royce RB211-524 series engines, requires inspections, adjustments, and functional checks of the thrust reverser system; installation of a terminating modification; and repetitive operational checks of the gearbox locks and the air motor brake following accomplishment of the modification. AD 94-17-03 refers to Boeing Service Bulletin 767-78-0059, Revision 2, dated June 10, 1993; or Revision 3, dated January 20, 1994; as the appropriate source of service information for accomplishing the required terminating action.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require accomplishing the actions specified in the service information described previously.

The phrase "related investigative actions" might be used in this proposed AD. "Related investigative actions" are follow-on actions that: (1) are related to the primary actions, and (2) are actions that further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

In addition, the phrase "corrective actions" might be used in this proposed AD. "Corrective actions" are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Costs of Compliance

We estimate that this proposed AD affects 1 airplane of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replacement and wiring change for Model 747-200B, 747-200F, 747-300, and 747SP series airplanes (1 U.S. airplane)	30 work-hours X $85 per hour = $2,550	$4,289	$6,839	$6,839

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Removal, installations, and wiring changes for Model 747-400 and 747-400F series airplanes (0 U.S. airplanes)	Up to 90 work-hours X $85 per hour = $7,650	Up to $16,607	Up to $24,257	$0
Replacements and wiring changes for Model 767-300 series airplanes (0 U.S. airplanes)	Up to 32 work-hours X $85 per hour = $2,720	Up to $2,245	Up to $4,965	$0

We estimate the following costs to do any necessary concurrent requirements. We have no way of determining the number of aircraft that might need to do the concurrent requirements.

Concurrent costs

Action	Labor cost	Parts cost	Cost per product
Installation of an additional locking system	336 work-hours X $85 per hour = $28,560	$62,674	$91,234
Installation of an additional locking gearbox on each engine and modification of the system wiring	185 work-hours X $85 per hour = $15,725	$72,860	$88,585
Installation of a second locking gearbox system	754 work-hours X $85 per hour = $64,090	$0	$64,090

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress

charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),

(3) Will not affect intrastate aviation in Alaska, and

(4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

The Boeing Company: Docket No. FAA-2013-0331; Directorate Identifier 2011-NM-170-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company airplanes, certificated in any category, identified in paragraphs (c)(1), (c)(2), and (c)(3) of this AD, and equipped with Rolls-Royce RB211-524 engines.

(1) Model 747-200B, 747-200F, 747-300, 747SP series airplanes, as identified in Boeing Service Bulletin 747-78-2178, Revision 1, dated August 4, 2011.

(2) Model 747-400 and 747-400F airplanes, identified in Boeing Service Bulletin 747-78-2180, Revision 2, dated November 11, 2011.

(3) Model 767-300 airplanes, as identified in Boeing Service Bulletin 767-78-0096, Revision 1, dated December 10, 2009.

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 7830, Engine Thrust Reverser.

(e) Unsafe Condition

This AD was prompted by multiple reports of uncommanded thrust reverser unlock events, three of which had all three locks disengaged. We are issuing this AD to

prevent an uncommanded thrust reverser deployment during takeoff or in-flight resulting in decreased airplane control and performance, possible runway excursions, and failure to climb.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Replacement

Within 60 months after the effective date of this AD: Do the actions specified in paragraphs (g)(1), (g)(2), and (g)(3) of this AD, as applicable.

(1) For Model 747-200B, 747-200F, 747-300, and 747SP series airplanes: Replace relays and relay sockets in the P252 and P253 panels with new relays and relay sockets, and do wiring changes, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78-2178, Revision 1, dated August 4, 2011.

(2) For Model 747-400 and 747-400F series airplanes: Install the components removed from the existing P252 and P253 panels, install new relays and relay sockets, and do wiring changes on the new P252 and P253 relay panels, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78-2180, Revision 2, dated November 11, 2011.

(3) For Model 767-300 series airplanes: Replace relays and relay sockets in the P36 and P37 panels with new relays and relay sockets, and do wiring changes in the P33, P36, and P37 panels, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 767-78-0096, Revision 1, dated December 10, 2009.

(h) Concurrent Requirements

(1) For Model 747-200B, 747-200F, 747-300, and 747SP series airplanes: Prior to or concurrently with accomplishing the actions required by paragraph (g)(1) of this AD, install an additional locking system on the thrust reversers, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78-2156, Revision 1, dated

August 30, 2001. Accomplishing this installation is a method of compliance with the installation required by paragraph (c) of AD 2000-01-05, Amendment 39-11502 (65 FR 1051, January 7, 2000).

(2) For Model 747-400 and 747-400F series airplanes identified as Group 1, 2, 3, 4, 7, 8, or 9 airplanes in Boeing Service Bulletin 747-78-2180, Revision 2, dated November 11, 2011: Prior to or concurrently with accomplishing the actions required by paragraph (g)(2) of this AD, install an additional locking gearbox on each engine and modify system wiring for in-flight fault indications of the thrust reverser system, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78-2158, Revision 2, dated July 29, 1999.

Note 1 to paragraph (h)(2) of this AD: Paragraph (a)(1) of AD 2000-02-22, Amendment 39-11540 (65 FR 5222, February 3, 2000), refers to Boeing Service Bulletin 747-78-2158, Revision 2, dated July 29, 1999, as the appropriate source of service information for accomplishing the installation required by that paragraph.

(3) For Model 767-300 series airplanes identified as Group 2 airplanes in Boeing Service Bulletin 767-78-0096, Revision 1, dated December 10, 2009: Prior to or concurrently with accomplishing the actions required by paragraph (g)(3) of this AD, install a second locking gearbox system on the thrust reversers, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 767-78-0059, Revision 3, dated January 20, 1994.

Note 2 to paragraph (h)(3) of this AD: Paragraph (c) of AD 94-17-03, Amendment 39-8998 (59 FR 41647, August 15, 1994), refers to Boeing Service Bulletin 767-78-0059, Revision 3, dated January 20, 1994, as an appropriate source of service information for accomplishing the installation required by that paragraph.

(i) Credit for Previous Actions

(1) This paragraph provides credit for the requirements of paragraph (g)(1) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-78-2178, dated January 22, 2009.

(2) This paragraph provides credit for the requirements of paragraph (g)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-78-2180, dated April 10, 2008.

(3) This paragraph provides credit for the requirements of paragraph (g)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-78-2180, Revision 1, dated November 11, 2010.

(4) This paragraph provides credit for the requirements of paragraph (g)(3) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 767-78-0096, dated August 7, 2008.

(5) This paragraph provides credit for the requirements of paragraph (h)(1) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-78-2156, dated October 31, 1996.

Note 3 to paragraph (i)(5) of this AD: Paragraph (c) of AD 2000-01-05, Amendment 39-11502 (65 FR 1051, January 7, 2000), refers to Boeing Service Bulletin 747-78-2156, dated October 31, 1996, as the appropriate source of service information for accomplishing the installation required by that paragraph.

(6) This paragraph provides credit for the requirements of paragraph (h)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-78-2158, Revision 1, dated January 22, 1998.

Note 4 to paragraph (i)(6) of this AD: In AD 2000-02-22, Amendment 39-11540 (65 FR 5222, February 3, 2000), Note 2 to paragraph (a)(1) of AD 2000-02-22 refers to Boeing Service Bulletin 747-78-2158, Revision 1, dated January 22, 1998, as a method of

compliance for accomplishing the installation required by paragraph (a)(1) of AD 2000-02-22.

(7) This paragraph provides credit for the requirements of paragraph (h)(3) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 767-78-0059, Revision 2, dated June 10, 1993.

Note 5 to paragraph (i)(7) of this AD: Paragraph (c) of AD 94-17-03, Amendment 39-8998 (59 FR 41647, August 15, 1994), refers to Boeing Service Bulletin 767-78-0059, Revision 2, dated June 10, 1993, as an appropriate source of service information for accomplishing the installation required by that paragraph.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in the Related Information section of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by the Boeing Commercial Airplanes ODA that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(k) Related Information

(1) For more information about this AD, contact Tung Tran, Aerospace Engineer, Propulsion Branch, ANM-140S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6505; fax: 425-917-6590; email: Tung.Tran@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; phone: 206-544-5000, extension 1; fax: 206-766-5680; Internet: https://www.myboeingfleet.com.You may review copies of the referenced service information at the FAA, Transport Airplane Directorate, FAA, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on April 10, 2013.

Jeffrey E. Duven,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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